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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,539	05/14/2001	Steven Towle	884.415US1	8328
21186	7590	02/08/2006	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH 1600 TCF TOWER 121 SOUTH EIGHT STREET MINNEAPOLIS, MN 55402				CHAMBLISS, ALONZO
		ART UNIT		PAPER NUMBER
		2814		

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

BSK

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/854,539	TOWLE, STEVEN
	Examiner	Art Unit
	Alonzo Chambliss	2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 14 November 2005.
- 2a) This action is FINAL.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-3,5 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-3,5 and 9-11 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 14 May 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3, 5, and 9-11 have been considered but are moot in view of the new ground(s) of rejection. The previous non-final rejection has been withdrawn.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs et al. (US 5,355,283) in view of Lo et al. (US 5,617,297).

With respect to Claims 1, 9, and 10, Marrs discloses a package core 402, 502 having an opening 409, 509 therein. A microelectronic die 401, 501 located within the opening 409, 509 of the package core 402, 502. A reinforced encapsulation material 403, 503 within the opening 409, 509 of the package core 402, 502 to hold the microelectronic die 401, 501 within the package core 402, 502, wherein the reinforced encapsulation 403, 503 material including a polymeric resin (i.e. including epoxy made of plastic) (see col. 6 lines 14-68, col. 7 lines 1-68, and col. 8 lines 1-50; Figs. 4 and 5). Marrs fails to disclose a polymeric resin having a fibrous filler material. However, Lo discloses a polymeric resin having a fibrous filler material col. 4 lines 17-39 and col. 5

lines 8-67). Thus, Marrs and Lo have the substantially the same environment of chip mounted on a substrate that is encapsulated by a polymeric resin. Therefore, it would have been obvious to substitute the polymeric resin with fiber fillers with the polymeric resin of Marrs, since the polymeric resin with fiber fillers would improve the weight, warpage and stress in the resin while improve the reliability of the semiconductor device as taught by Lo.

With respect to Claims 2 and 3, Marrs-Lo discloses the claimed invention except for the fibers length and width ratio. It is note that the specification contains no disclosure of either the critical nature of the claimed dimension/ratio or any unexpected results arising therefrom. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate length between 1 and 40 micrometers with a width ratio that is no less than 5 into the product of Marrs-Lo, since the fiber would reliable binding material while improving the warpage between the chip and the substrate.

With respect to Claim 11, Marrs discloses at least one metallization layer 405 and 407 or 505 and 507 built up over the package core, wherein the at least one metallization layer being conductively coupled to bond pads on a surface of the microelectronic die (see col. 6 lines 14-67 and col. 7 lines 1-5).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs et al. (US 5,355,283)- Lo et al. (US 5,617,297) as applied to claim 1 above, and further in view of Kato et al. (US 6,282,352).

With respect to Claim 5, Marrs-Lo discloses the claimed invention except for a fibrous filler material including carbon fibers. However, Kato discloses a fibrous filler material including carbon fibers (see col. 7 lines 29-50 and col. 17 lines 57-67). Thus, Marrs-Lo and Kato discloses the same environment of a chip mounted on a substrate and encapsulated by a molding material. Therefore, it would have been obvious to incorporate carbon fibers into the polymeric material of the Marrs-Lo, since the carbon fibers would improve the rigidity and heat resistance of polymeric material as taught by Kato.

The prior art made of record and not relied upon is cited primarily to show the product of the instant invention.

### ***Conclusion***

5. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (571) 272-1927.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For

more information about the PMR system see <http://pair-dkect.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or [EBC\\_Support@uspto.gov](mailto:EBC_Support@uspto.gov).

AC/February 4, 2006



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